

## SOCIAL RESPONSE TO EPIDEMIC DISEASE IN PITTSBURGH 1872-1895

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MORTALITY records for contagious diseases in Pittsburgh in the second half of the nineteenth century, when viewed in the context of the activities of the Pittsburgh Board of Health, reveal the prevailing social response to disease.<sup>1</sup> A crisis mentality, that forestalled action until an emergency arose, added one component to this attitude. Only when epidemics of disease occurred was attention focused upon the ever-growing health problems in the expanding city of Pittsburgh. The other component, which was neglect of the crowd diseases now associated with the spread of urbanization and industrialization, inhibited activities to create a healthy population in Pittsburgh.

The vital statistics for the years 1872-1895 indicate that the ever-present diseases of tuberculosis, diphtheria, typhoid fever, pneumonia, and bronchitis killed many people each year. Yet public concern over these diseases appeared only when death rates reached extraordinary heights. At the same time that health officials and the public accepted the "normal" incidence of these diseases as a fact of life, the possibility of cholera or smallpox appearing in Pittsburgh engendered worry and fear among citizens. The action that municipal authorities did take when confronted with either cholera or smallpox as contrasted with diphtheria, tuberculosis, typhoid fever, pneumonia, and bronchitis illustrates the social attitude toward infectious disease in Pittsburgh in the nineteenth century.

The apprehension caused by smallpox and cholera is understandable because both struck quickly and caused horrible and untimely deaths. The difference between smallpox and cholera in the nineteenth century was that cholera was little understood until late in that century. Smallpox, on the other hand, was a pestilence that man knew how to conquer.

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1 The permanent Pittsburgh Board of Health was founded in 1851 but did not collect vital statistics or publish reports until 1872.

In 1854, John Snow, an English physician, had already made a significant contribution to the understanding of the spread of cholera. He systematically investigated the causes of a cholera epidemic in London and concluded that the cholera infection was water-borne, that the poison of cholera entered the alimentary canal by mouth, and that the infection was probably derived from the excreta of cholera patients. He demonstrated that cholera could be transmitted through soiled hands or contaminated food and water and that wastes from cholera patients could pollute wells and other community water supplies. Although Snow's views pointed to a theory of a living organism that produced disease, he was unable to identify the agent of infection. This occurred in the 1850s, but the views of Snow were not readily accepted either by physicians or the general public until later in the century. In 1883, Robert Koch isolated and cultured the microorganism that caused cholera and proved the essential validity of Snow's findings. Yet in 1891, after the discovery of the disease vector by Koch, the causes of cholera still were debated vigorously.

Though vaccination against smallpox had been accepted generally since the early 1800s, Pittsburgh health authorities feared an outbreak of smallpox. Indeed, smallpox caused numerous deaths in 1877, 1878, and 1882.

Table 1 shows the number of deaths in the city of Pittsburgh for the twenty-three year period from 1873 to 1895. The statistics illustrate that despite widespread fear and dread of the disease, smallpox incidence, as measured by mortality, was restricted to a minimum of two deaths per year in the period 1885-1895. In spite of the low death rate from smallpox, the citizens of Pittsburgh and health officials continued to fear a new epidemic in their city. Many who had previously experienced the ravages of epidemic smallpox remembered the havoc the disease had created. Thus, the glaring disparity between the incidence of smallpox after 1882 and the panic that fear of smallpox provoked.

From its inception in 1851, a major responsibility of the permanent Board of Health was control of epidemic disease. Table 1 demonstrates that smallpox was one infectious disease on which the board exerted some measure of control. The methods they used to control smallpox deserve some discussion.

During an epidemic of smallpox in 1871-1872, the Board of Health made provisions for free vaccination. In 1871, when 400 deaths resulted from smallpox, the Board of Health gave 4,322 free vaccina-

tions.<sup>2</sup> The board continued to provide free vaccinations for the citizens of Pittsburgh annually.

However, from the inauguration of the free vaccination policy until 1895, when a compulsory vaccination law was passed, vaccination was not legally compulsory. Although the Board of Health, and later the Bureau of Health,<sup>3</sup> assumed the responsibility for vaccination, they consistently lacked the funds to do a thorough job. In 1888, the Bureau of Health sought from the councils of the various cities, addi-

TABLE 1<sup>4</sup>  
CITY OF PITTSBURGH:  
DEATHS FROM SMALLPOX 1873-1895

| Year | No. Deaths | Year | No. Deaths | Year | No. Deaths | Year | No. Deaths |
|------|------------|------|------------|------|------------|------|------------|
| 1873 | 25         | 1879 | 1          | 1885 | —          | 1891 | —          |
| 1874 | —          | 1880 | —          | 1886 | —          | 1892 | 2          |
| 1875 | 29         | 1881 | 448        | 1887 | 2          | 1893 | —          |
| 1876 | 86         | 1882 | 300        | 1888 | —          | 1894 | 1          |
| 1877 | 269        | 1883 | 17         | 1889 | 2          | 1895 | —          |
| 1878 | 113        | 1884 | 12         | 1890 | —          |      |            |

tional vaccination funds of \$10,000 to vaccinate 50,000 people.<sup>5</sup> The bureau again sought funds in 1889. In 1890, Thomas W. Baker, the superintendent of the Bureau of Health, feared that smallpox was threatening Pittsburgh inhabitants and asked for a thorough vaccination program. He stressed the fact that large population growth and immigration made it necessary to vaccinate 10,000 more people. Although a rule existed prohibiting unvaccinated schoolchildren from entering school, Baker claimed that the school authorities did not comply with the rule, and he suggested that a physician visit the schools to check children for vaccinations and to prohibit all unvaccinated children from entering.<sup>6</sup> The health agency also reported and placarded smallpox cases and maintained the smallpox hospital erected in 1875.

This brief discussion of the methods used to control smallpox suggests that funds for gratuitous vaccination were consistently inadequate and that the proportion of the population vaccinated each year

2 City of Pittsburgh, *Annual Report of the Board of Health, 1872* (Pa. Room, Carnegie Library; Statistics Div. of Allegheny Co. Dept. of Health), 8 (hereafter cited as *Board Report*).

3 The Board of Health became the Bureau of Health in 1888 when Pittsburgh's government was reorganized by a new charter.

4 SOURCE: *Board Report, Annual Report of the Bureau of Health, 1873-95* (hereafter cited as *Bureau Report*).

5 *Bureau Report, 1888*, 8.

6 *Ibid.*, 1890, 9.

was small. These facts, together with the sporadic outbreaks of smallpox in Pittsburgh in 1877, 1878, and 1882, further suggest that the control of smallpox may have stemmed more from a decreased entry of the disease into the area than from the adequacy of the control methods adopted by the health agency.

Cholera, malignant and rapidly fatal, was as dramatic and as feared in 1891 as it had been in 1851. In Pittsburgh, almost a decade after Koch discovered and isolated the cholera bacillus, the existent knowledge of this disease was not commonly accepted. The medical profession certainly did not unanimously accept the new bacteriological knowledge. This highly contagious, spectacular, and misunderstood disease crowded the less dramatic, yet ever present, communicable diseases out of the public's mind. Response to cholera vividly illustrates the crisis mentality toward disease in nineteenth-century Pittsburgh. It was fear of cholera that had prompted the formation of the first permanent Board of Health in 1851, goaded the citizens of Pittsburgh into sporadic efforts at municipal cleanliness, and more than once caused the city councils to raise the level of appropriations for health purposes.

In 1891, fear of cholera once again became the impetus for improvement of health conditions. The citizens of Pittsburgh were threatened by an invasion of the disease which originated in the northwest provinces of India and with unprecedented rapidity traveled overland to Russia, Germany, England, and the United States. The daily newspapers of Pittsburgh followed the spread of cholera. The Bureau of Health responded as health officials had previously done in 1851 and 1856 by trying to place Pittsburgh in the "best sanitary condition."<sup>7</sup>

Medical officers met arriving trains to prevent diseased persons from entering Pittsburgh and to take them outside the city limits to a camp established for the diseased. All suspected cases of cholera received careful examination in a newly created laboratory. The municipality erected a special hospital for the reception and care of cases of cholera and provided for the establishment of additional hospitals in different sections of the city. There were provisions to staff the hospitals (when built) with competent members of the medical profession who volunteered their services. A number of physicians met and discussed the prevention and care of cholera and appointed a subcommittee to prepare a report with suggestions to prevent a cholera epidemic.<sup>8</sup>

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<sup>7</sup> *Ibid.*, 1892, 17.

<sup>8</sup> *Ibid.*, 27-28.

The subcommittee suggested disinfecting. It also recommended burning as the only "perfect" disinfectant and suggested printing a circular with instructions for disinfecting. Other recommendations included better garbage collection and a liberal appropriation, in the form of an emergency fund, to prepare for the onslaught of cholera. The subcommittee even recommended that the state legislature end all immigration from countries where cholera prevailed.<sup>9</sup>

In response to the cholera threat, the Bureau of Health more than doubled the size of its sanitary force, intending to reach all parts of the city quickly and effectively. The chief sanitary inspector, James M. McEwen, reflecting upon this crisis, said, "It was gratifying to find the great bulk of the people seconding our efforts in this regard. Instead of meeting our officers with a frown and avoiding them altogether, as is frequently done at other times, they seemed to anticipate their coming and generally meet them cheerfully and more than halfway."<sup>10</sup>

The Chamber of Commerce appeared on the health scene and offered its cooperation to health officials.<sup>11</sup> Business and civic leaders had organized the Chamber of Commerce in 1874 "for the purpose of protecting, fostering and developing the commercial, manufacturing and business interests of Allegheny County by joint and concerted action."<sup>12</sup> In 1892, for the first time since the founding of the Chamber of Commerce, the organization played an active role in health affairs. It is possible that the same people who ignored the less-spectacular diseases, yet responded to the threat of cholera, did so because they did not associate these diseases with a business decline but did fear the adverse influence of cholera upon commerce and industry in Pittsburgh.

Deaths due to cholera were not recorded in the Bureau of Health's vital statistics for 1891 and 1892 or in subsequent years. The cholera panic waned and few of the recommendations of the subcommittee were inaugurated.

At the same time that citizens of Pittsburgh responded with such activity to an impending epidemic of cholera, they neglected the daily, less-spectacular health problems of the city. During the same year that forces were mustered to combat cholera, the Bureau of Health sought, but did not receive, funds for better hospital facilities. Indeed, a

<sup>9</sup> Ibid., 32.

<sup>10</sup> Ibid., 53-54.

<sup>11</sup> Ibid., 27.

<sup>12</sup> Stefan Lorant, *Pittsburgh, The Story of an American City* (New York, 1964), 160.

pending ordinance in city council provided for the sale of the existing smallpox hospital and its grounds. With the smallpox hospital in danger of removal and without a municipal hospital for the care of infectious diseases such as diphtheria and scarlet fever, the superintendent of the Bureau of Health stated, "It is a lasting disgrace upon the name and fame of this usually benevolent city, that it has no hospital in which to care for its poor and needy citizens who may be stricken with these contagious diseases."<sup>13</sup> Other serious, related health problems such as the sale of adulterated or disease-carrying milk, the ever-present garbage collection and disposal problem, and the unhealthy and inadequate water supply, remained unresolved in the decade of the nineties.

Table 2 illustrates further the significant disparity between the diseases people worried about, cholera and smallpox, and those causing the most deaths. It points out that while citizens and health officials dissipated their energies worrying about cholera, ever-present whooping cough, measles, diphtheria, scarlet fever, and typhoid fever con-

TABLE 2<sup>14</sup>  
CITY OF PITTSBURGH:  
DEATHS FROM INFECTIOUS DISEASE 1873-1895

| Year | Measles | Whooping<br>Cough | Diphtheria | Smallpox | Scarlet<br>Fever | Typhoid<br>Fever | Cholera |
|------|---------|-------------------|------------|----------|------------------|------------------|---------|
| 1873 | 47      | 57                | 73         | 25       | 122              | 194              | —       |
| 1874 | 71      | 79                | 53         | —        | 313              | 149              | —       |
| 1875 | 15      | 55                | 64         | 29       | 208              | 121              | —       |
| 1876 | 37      | 24                | 77         | 86       | 93               | 84               | —       |
| 1877 | 38      | 136               | 401        | 269      | 95               | 71               | —       |
| 1878 | 4       | 53                | 483        | 113      | 94               | 115              | —       |
| 1879 | 54      | 62                | 354        | 1        | 95               | 91               | —       |
| 1880 | 89      | 102               | 311        | —        | 220              | 211              | —       |
| 1881 | 46      | 37                | 210        | 448      | 332              | 248              | —       |
| 1882 | 91      | 96                | 185        | 300      | 63               | 268              | —       |
| 1883 | 42      | 80                | 170        | 17       | 50               | 188              | —       |
| 1884 | 69      | 35                | 321        | 12       | 71               | 130              | —       |
| 1885 | 46      | 65                | 243        | —        | 153              | 154              | —       |
| 1886 | 117     | 109               | 249        | —        | 182              | 140              | —       |
| 1887 | 180     | 43                | 281        | 2        | 46               | 269              | —       |
| 1888 | 55      | 64                | 126        | —        | 45               | 191              | —       |
| 1889 | 66      | 37                | 213        | 2        | 85               | 218              | —       |
| 1890 | 157     | 18                | 206        | —        | 33               | 315              | —       |
| 1891 | 33      | 114               | 301        | —        | 59               | 248              | —       |
| 1892 | 24      | 55                | 285        | 2        | 114              | 256              | —       |
| 1893 | 175     | 98                | 171        | —        | 204              | 294              | —       |
| 1894 | 34      | 117               | 128        | 1        | 81               | 152              | —       |
| 1895 | 42      | 24                | 132        | —        | 114              | 213              | —       |

<sup>13</sup> *Bureau Report*, 1892, 10.

<sup>14</sup> SOURCE: *Board Report*, *Bureau Report*, 1873-95.

tinued to take a high toll in human life. For instance, when in 1883, a nonsmallpox year (17 deaths due to smallpox), diphtheria caused 170 deaths; typhoid fever, 188; whooping cough, 80; measles, 42; and scarlet fever, 50 deaths. In 1881, a smallpox epidemic year (448 deaths due to smallpox), scarlet fever caused 332 deaths; typhoid fever, 248; and diphtheria, 210. Despite these mortality statistics, Pittsburghers accepted as normal the deaths attributed to diseases other than smallpox. There was cause for dismay only when mortality rates showed a marked increase for a specific disease, as in 1877 and 1878, when diphtheria prevailed in Pittsburgh and in 1887 when typhoid fever prevailed.

Health officials could easily be moved to action by fear of cholera, but their responses to diphtheria and typhoid fever, for instance, diseases which were ever present and did claim many lives, illustrate that the Board of Health responded to health problems only when they believed a crisis was impending because the disease was on the rampage or death rates were extraordinarily high.

Diphtheria caused numerous deaths in the period under discussion and reached epidemic proportions from August 1877 to July 1879. Four hundred and one persons died from diphtheria in 1877 and 354 in 1879. Only between these two peak years did diphtheria concern health officials, although recorded deaths from diphtheria were always high.

There existed a diversity of views about the etiology of diphtheria until the last decade of the nineteenth century. A consistent method of prevention and control of the disease eluded health officials until the disease's etiology was clarified. Some physicians and health officials considered the contagious character of diphtheria to be its paramount cause. Many others believed that local unsanitary conditions, filth, and dampness spread diphtheria. Another group of physicians and health officials thought that the complex causes of contagion and local conditions facilitated the spread of diphtheria. Crosby Gray, the health officer of the Board of Health, stated in 1877 that the sanitary condition of the city was not good, and he associated the prevalence of diphtheria with improper drainage and sewerage. "From the most reliable information and data available it was due (diphtheria) in great measure to improper and insufficient drainage and sewerage. This matter is not considered of sufficient importance by the public or by the city authorities. Although theoretically it is a subject which has engaged the attention of the Board of Health for a number of years,

yet practically it has done and could do little more than recommend. These recommendations I regret to say were not always upheld, much to the detriment of public health."<sup>15</sup>

The Board of Health believed that lack of proper drainage, faulty receptacles for night soil, and badly constructed sewers and sewer connections contributed to the prevalence of diphtheria in Pittsburgh. They offered a resolution to city councils to clean the sewers and sewer traps, and city councils in turn referred the resolution to the commissioner of the South Side district for an estimate of the cost. After numerous delays, a resolution to clean the sewers and sewer traps on the South Side was passed, "but not until the disease had played sad havoc among residents of that locality and spread to other portions of the city."<sup>16</sup> Because many regarded diphtheria as only mildly infectious, they did not employ isolation and disinfection as weapons against the spread of the disease. Dr. Sniveley, the physician to the Board of Health, noted that diphtheria in Pittsburgh struck children among whom the average age of death was four years, eleven and one-half months, and that the outbreak of the disease was sudden and initially restricted to an area lacking adequate sewerage. "The evidence furnished by the disease during its prevalence in this city sustains the opinion entertained by a majority of professionals in Great Britain and on the continent of Europe, viz. that it is a decidedly miasmatic or infectious, and moderately contagious disease."<sup>17</sup> This stress upon the relationship between the high incidence of deaths from diphtheria and the inadequate sewerage system of Pittsburgh led the board to counteract the epidemic with recommendations for better sewers, which was done only when death rates from diphtheria were high.

The reaction to typhoid fever was equivalent to that of diphtheria, except that health officials employed an economic argument in an appeal to city councils to act to stop the spread of typhoid fever. Epidemics of typhoid fever affected the working force (adults) while diphtheria was a disease that affected mainly children.

Numerous yearly deaths resulted from typhoid fever in Pittsburgh (see Table 2), but this disease, despite a "normal" high rate of incidence, did not command the attention of the Board of Health until epidemic conditions existed. In 1887, when typhoid fever caused 269 deaths, the board appointed a special committee to examine the

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<sup>15</sup> *Board Report, 1877, 7.*

<sup>16</sup> *Ibid., 16.*

<sup>17</sup> *Ibid., 1878, 66.*



South Side water supply to inquire into an epidemic in that section of the city. The Board of Health employed Hugo Black, professor of chemistry at Western Pennsylvania Medical College, and two chemists, Mr. Hunt and Mr. Clapp, to make a chemical analysis; also Dr. E. A. Mundorff and Professor J. H. Logan, both on the faculty of Western Pennsylvania Medical College, to make a microscopic examination of the South Side water supply. Both studies proved the water impure, associated the typhoid fever epidemic with the impure water supply, and blamed the character of the South Side water supply for the high incidence of typhoid fever.<sup>18</sup>

Action, however, was not taken to purify the South Side's water supply. Apparently, the use of experts in the field of chemistry and microscopy did not convince the city councils of the need for pure water. The Board of Health tried another line of reasoning — an economic argument. "A continuance of such a water supply for twenty years to come, with the yearly increase in contamination that in the nature or character of the surroundings is inevitable, means to the South Side and to the city at large, leaving out all sentiment and taking only a business view of it, a great loss in production on account of sickness and disability. It means a great loss in the increase of wealth that would accrue from this production. It means thousands of deaths, the money value of which, if added to the loss in production, would be more than sufficient to procure a good water supply, if it be brought a hundred miles."

Members of a special committee of the Board of Health — J. C. Dunn, James McCann, and Crosby Gray — calculated the economic loss from typhoid fever. If 260 people died and each life was worth \$1,275, the total value would be \$331,500. Burial expenses were estimated at \$50.00 per person, totaling \$13,000. Then they estimated a probable 2,600 people ill and therefore unemployed for thirty days — a total of 78,000 days lost — deducted 15 percent and were left with 66,300 days of lost labor. They calculated that the average value of a day's labor in 1887 was \$1.25 and assumed that \$82,875 would be lost in that manner. The cost of nursing was calculated at one-quarter of the total of \$82,875 or approximately 31c a day. Therefore, the money spent in nursing equaled \$20,718. The cost of medicine at \$2.00 a person totaled \$5,200. The value of production lost was estimated at one-third of a day's wages, or approximately 42c, totaling \$27,625. The

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18 Ibid., 1880-87, 58-59.

grand sum of lost wealth caused by typhoid fever thus equaled \$480,918.<sup>19</sup>

There is further evidence that other diseases exacting a high toll in human life did not receive the full attention of the Board of Health, especially during periods of an impending cholera or smallpox epidemic. They were simply not crisis diseases. Tables 3, 4, and 5 display yearly deaths from infant mortality, pneumonia and bronchitis, and consumption, respectively.

Mortality records from 1877 to 1895 for the city of Pittsburgh indicate that infant mortality was always high. Statistics for each of these years attribute at least 40 percent of the total mortality to deaths of children under five years of age. Bronchitis and pneumonia, neglected by health officials, also took a high toll in human life.

Health officials accepted consumption, or tuberculosis, a major killer, as a factor in the lives of the people in industrial cities. In the nineteenth century, although consumption appeared in all major cities, physicians considered the disease constitutional rather than contagious. Because they believed that the disease was not highly contagious, physicians and health officials did not associate tuberculosis with the spread of industrial society which created conditions that facilitated the spread of that illness. They were either unable or unwilling to associate one with the other. The successful control of tuberculosis took time, new bacteriological knowledge, and a new set of values.

The response of the citizens of Pittsburgh to endemic and epidemic disease reveals the discrepancy between the diseases people feared most and those that caused the greatest amount of sickness and death. Although health officials were aware of the high incidence of disease in their city, they made only limited attempts to decrease the resulting, high death rates. The board's inability to control disease in Pittsburgh stemmed from social attitudes which accepted some diseases as "normal," lack of funds, and, until 1895, an inability to use new scientific knowledge to prevent the outbreak of disease. Furthermore, evidence does not exist to show that civic leaders or health officials questioned the high incidence of endemic illness in Pittsburgh until the twentieth century.

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<sup>19</sup> Ibid., 64-65.

TABLE 3<sup>20</sup>  
CITY OF PITTSBURGH:  
INFANT MORTALITY (EXPRESSED AS PERCENTAGE  
OF TOTAL MORTALITY) 1877-1895

| Year | % of Total Mortality | Year | % of Total Mortality |
|------|----------------------|------|----------------------|
| 1877 | 51.29                | 1887 | 45.5                 |
| 1878 | 47.13                | 1888 | 46                   |
| 1879 | —                    | 1889 | 41                   |
| 1880 | —                    | 1890 | 43                   |
| 1881 | —                    | 1891 | 42                   |
| 1882 | 46                   | 1892 | —                    |
| 1883 | 40                   | 1893 | 41                   |
| 1884 | 48.5                 | 1894 | —                    |
| 1885 | 44                   | 1895 | 40                   |
| 1886 | 49.5                 |      |                      |

TABLE 4<sup>21</sup>  
CITY OF PITTSBURGH:  
DEATHS FROM PNEUMONIA AND BRONCHITIS 1880-1895

| Year | Deaths from Pneumonia | Deaths from Bronchitis |
|------|-----------------------|------------------------|
| 1880 | 203                   | 92                     |
| 1881 | 221                   | 71                     |
| 1882 | 306                   | 106                    |
| 1883 | 261                   | 68                     |
| 1884 | 357                   | 120                    |
| 1885 | 349                   | 125                    |
| 1886 | 418                   | 143                    |
| 1887 | 408                   | 163                    |
| 1888 | 304                   | 222                    |
| 1889 | 447                   | 153                    |
| 1890 | 556                   | 153                    |
| 1891 | 704                   | —                      |
| 1892 | —                     | —                      |
| 1893 | 680                   | —                      |
| 1894 | 526                   | 159                    |
| 1895 | 556                   | 184                    |

<sup>20</sup> SOURCE: *Board Report, Bureau Report, 1877-95.*

<sup>21</sup> *Ibid.*, 1880-95.

TABLE 5<sup>22</sup>  
CITY OF PITTSBURGH:  
YEARLY DEATHS FROM CONSUMPTION 1873-1895

| Year | Number of Deaths | Year | Number of Deaths |
|------|------------------|------|------------------|
| 1873 | 326              | 1885 | 372              |
| 1874 | 331              | 1886 | 380              |
| 1875 | 345              | 1887 | 408              |
| 1876 | 341              | 1888 | 363              |
| 1877 | 301              | 1889 | 309              |
| 1878 | 315              | 1890 | 350              |
| 1879 | 261              | 1891 | 437              |
| 1880 | 314              | 1892 | 435              |
| 1881 | 349              | 1893 | 449              |
| 1882 | 316              | 1894 | 455              |
| 1883 | 353              | 1895 | 366              |
| 1884 | 355              |      |                  |

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22 Ibid., 1873-95.